

## **Diana L. Blaney**

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### **RESEARCH INTERESTS**

Dr. Blaney's science research is focused on composition and chemistry using short wavelength infrared reflectance spectroscopy, thermal emission spectroscopy, and laser induce breakdown spectroscopy. She also leads technology development programs to mature visible to short wavelength imaging spectrometers for landed and orbital planetary missions. She is the Principal Investigator of the Mapping Imaging Spectrometer for Europa (MISE) experiment on NASA's Europa Clipper mission which will use maps of surface composition to investigate the habitability of Europa's ocean and Europa's geologic history.

### **EDUCATION**

- PhD, Geology and Geophysics, Planetary Sciences Division Department of Geology and Geophysics, University of Hawaii at Manoa 1990.
- B.S. Engineering Physics, Mechanical Engineering: Energy Conversion Option, The Ohio State University, 1984.

### **EMPLOYMENT**

- Jet Propulsion Laboratory (1992 – present): Scientist in Earth and Space Sciences Division (1992-1996), Research Scientist (1996-2005) Earth and Space Sciences Division, Project Scientist I (2005-2007), Project Scientist II (2007-2012), Program Project Science Leadership V (2012-2015), Program Project Science Leadership VI (current)
- National Research Council Research Associate, Jet Propulsion Laboratory (1990-1992)

### **RECENT INSTRUMENT DEVELOPMENT ACTIVITIES**

- Principle Investigator on JPL Research and Technology Development Grand for Europa Imaging Spectrometer Risk Reduction (2009-2012).
- Science Lead on JPL Research and Technology Development grant for the Ultra Compact Imaging Spectrometer (2009-2012) P.I. P. Mouroulis.
- Principle Investigator for Ultracompact Imaging Spectrometer Risk Mitigation (NASA MatISSE), (2013-2016).
- Science Lead on Europa Short Wavelength Imaging Spectrometer Risk Mitigation (NASA ICEE), 2013-2014. P.I. R. Green.

### **PROJECT PARTICIPATION**

- Mapping Imaging Spectrometer for Europa Principal Investigator (2015-present)
- Co-Investigator/Investigation Scientist, ChemCam 2009 Mars Science Laboratory (2005-present)

- Mars Exploration Rovers Deputy Project Scientist (2007-2015)
- Co-Investigator, Phoenix Mars 2007 Scout Mission (2003-2009)
- Mini-TES Investigation Scientist for the 2003 Mars Exploration Rovers (2000-2009)
- Co-Investigator, UREY: Mars In Situ Organic and Oxidant Detection on Exo-Mars (2008-2012)
- Co-Investigator Mars Organic Detector Experiment: 2003 HEDS Lander Payload (2000)
- Co-Investigator, Infrared Spectrometer and Microscope Team Leader CIRCLE Investigation on Champollion Comet Lander: Co-I, (1999-2000)
- Investigation Scientist for the Sample Transfer Chain for 2005 Mars Sample Return Mission (2000)
- Study Scientist for the 2003 Small Scout Lander Option (1999-2000)
- Deputy Project Scientist for the Deep Space 2 Microprobes (1999)
- Mars Polar Lander Participating Scientist (1999)

#### **NASA SELECTED SCIENCE DEFINITION TEAMS**

- Europa Habitability Mission Science Definition Team (2011-2014)
- Jupiter Flagship Science Definition Team (2008 –2010)
- Europa Outer Planet Flagship (2007-2008)
- Jupiter Icy Moons Orbiter (JIMO) Science Definition Team (2003-2005)
- Mars Airplane Science Definition Team (1999)

#### **PROFESSIONAL SOCIETIES**

- Division of Planetary Sciences of the American Astronomical Society (Treasurer 2007-2011, Federal Relations Subcommittee 2012-2015 )
- American Geophysical Union

#### **PEER REVIEWED PUBLICATIONS**

Anderson, R., J.C. Bridges, A. Williams, L. Edgar, A. Ollila, J. Williams, M. Nachon, N. Mangold, M. Fisk, J. Schieber, S. Gupta, G. Dromart, R. Wiens, S. Le Mouélic, O. Forni, N. Lanza, A. Mezzacappa, V. Sautter, D. Blaney, B. Clark, S. Clegg, O. Gasnault, J. Lasue, R. Lèveillé, E. Lewin, K.W. Lewis, S. Maurice, H. Newsom, S.P. Schwenzer, and D. Vaniman, ChemCam results from the Shaler outcrop in Gale Crater, Mars, *Icarus*, 249:2-21, doi:10.1016/j.icarus.2014.07.025, 2015.

Arvidson, R. E., C. Acton, D. Blaney, J. Bowman, S. Kim, G. Klingelhofer, J. Marshall, C. Niebur, J. Plescia, R. S. Saunders and C. T. Ulmer (1998). "Rocky 7 prototype Mars rover field geology experiments - 1. Lavic Lake and Sunshine Volcanic Field, California." *Journal of Geophysical Research-Planets* 103(E10): 22671-22688.

Arvidson, R. E., R. C. Anderson, P. Bartlett, J. F. Bell, D. Blaney, P. R. Christensen, P. Chu, L. Crumpler, K. Davis, B. L. Ehlmann, R. Fergason, M. P. Golombek, S. Gorevan, J. A. Grant, R. Greeley, E. A. Guinness, A. F. C. Haldemann, K. Herkenhoff, J. Johnson, G. Landis, R. Li, R. Lindemann, H. McSween, D. W. Ming, T. Myrick, L. Richter, F. P. Seelos, S. W. Squyres, R. J. Sullivan, A. Wang and J. Wilson (2004). "Localization and physical properties experiments conducted by Spirit at Gusev crater." *Science* 305(5685): 821-824.

Arvidson, R. E., S. W. Squyres, R. C. Anderson, J. F. Bell, D. Blaney, J. Bruckner, N. A. Cabrol, W. M. Calvin, M. H. Carr, P. R. Christensen, B. C. Clark, L. Crumpler, D. J. Des Marais, P. A. de Souza, C. d'Uston, T. Economou, J. Farmer, W. H. Farrand, W. Folkner, M. Golombek, S. Gorevan, J. A. Grant, R. Greeley, J. Grotzinger,

E. Guinness, B. C. Hahn, L. Haskin, K. E. Herkenhoff, J. A. Hurowitz, S. Hviid, J. R. Johnson, G. Klingelhofer, A. H. Knoll, G. Landis, C. Leff, M. Lemmon, R. Li, M. B. Madsen, M. C. Malin, S. M. McLennan, H. Y. McSween, D. W. Ming, J. Moersch, R. V. Morris, T. Parker, J. W. Rice, L. Richter, R. Rieder, D. S. Rodionov, C. Schroder, M. Sims, M. Smith, P. Smith, L. A. Soderblom, R. Sullivan, S. D. Thompson, N. J. Tosca, A. Wang, H. Wanke, J. Ward, T. Wdowiak, M. Wolff and A. Yen (2006). "Overview of the Spirit Mars Exploration Rover Mission to Gusev Crater: Landing site to Backstay Rock in the Columbia Hills." *Journal of Geophysical Research-Planets* 111(E2).

Bada, J. L., P. Ehrenfreund, F. Grunthaler, D. Blaney, M. Coleman, A. Farrington, A. Yen, R. Mathies, R. Amudson, R. Quinn, A. Zent, S. Ride, L. Barron, O. Botta, B. Clark, D. Glavin, B. Hofmann, J. L. Josset, P. Rettberg, F. Robert and M. Sephton (2008). "Urey: Mars Organic and Oxidant Detector." *Space Science Reviews* 135(1-4): 269-279.

Bell, J. F., S. W. Squyres, R. E. Arvidson, H. M. Arneson, D. Bass, D. Blaney, N. Cabrol, W. Calvin, J. Farmer, W. H. Farrand, W. Goetz, M. Golombek, J. A. Grant, R. Greeley, E. Guinness, A. G. Hayes, M. Y. H. Hubbard, K. E. Herkenhoff, M. J. Johnson, J. R. Johnson, J. Joseph, K. M. Kinch, M. T. Lemmon, R. Li, M. B. Madsen, J. N. Maki, M. Malin, E. McCartney, S. McLennan, H. Y. McSween, D. W. Ming, J. E. Moersch, R. V. Morris, E. Z. N. Dobre, T. J. Parker, J. Proton, J. W. Rice, F. Seelos, J. Soderblom, L. A. Soderblom, J. N. Sohl-Dickstein, R. J. Sullivan, M. J. Wolff and A. Wang (2004). "Pancam multispectral imaging results from the Spirit Rover at Gusev crater." *Science* 305(5685): 800-806.

Blaney, D.L., R.C. Wiens, S. Maurice, S.M. Clegg, R.B. Anderson, L.C. Kah, S. Le Mouélic, A. Ollila, N. Bridges, R. Tokar, G. Berger, J.C. Bridges, A. Cousin, B. Clark, M.D. Dyar, P.L. King, N. Lanza, N. Mangold, P.-Y. Meslin, H. Newsom, S. Schröder, S. Rowland, J. Johnson, L. Edgar, O. Gasnault, O. Forni, M. Schmidt, W. Goetz, K. Stack, D. Sumner, M. Fisk, and M.B. Madsen, Chemistry and texture of the rocks at Rocknest, Gale Crater: Evidence for sedimentary origin and diagenetic alteration, *Journal of Geophysical Research Planets*, 119 (9):2109-2131, doi:10.1002/2013JE004590, 2014.

Blaney, D. L. (2005). "Mars chemistry: Water, salts, and the evolution of the martian surface." *Abstracts of Papers of the American Chemical Society* 229: U1186-U1186.

Blaney, D. L., T. V. Johnson, D. L. Matson and G. J. Veeder (1995). "Volcanic-Eruptions On Io - Heat-Flow, Resurfacing, And Lava Composition." *Icarus* 113(1): 220-225.

Blaney, D. L. and T. B. McCord (1989). "AN OBSERVATIONAL SEARCH FOR CARBONATES ON MARS." *Journal of Geophysical Research-Solid Earth and Planets* 94(B8): 10159-10166.

Blaney, D. L. and T. B. McCord (1995). "Indications Of Sulfate Minerals In The Martian Soil From Earthbased Spectroscopy." *Journal of Geophysical Research-Planets* 100(E7): 14433-14441.

Blaney, D. L., G. J. Veeder, D. L. Matson, T. V. Johnson, J. D. Goguen and J. R. Spencer (1997). "Io's thermal anomalies: Clues to their origins from comparison of

ground based observations between 1 and 20  $\mu$  m." *Geophysical Research Letters* 24(20): 2459-2462.

Bridges, N.T., F.J. Calef, B. Hallet, K.E. Herkenhoff, N.L. Lanza, S. Le Mouélic, C.E. Newman, D.L. Blaney, M.A. de Pablo, G.A. Kocurek, Y. Langevin, K.W. Lewis, N. Mangold, S. Maurice, P.-Y. Meslin, P. Pinet, N.O. Renno, M.S. Rice, M.E. Richardson, V. Sautter, R.S. Sletten, R.C. Wiens, and R.A. Yingst, The rock abrasion record at Gale Crater: Mars Science Laboratory results from Bradbury Landing to Rocknest, *Journal of Geophysical Research Planets*, 119(6):1374-1389, doi:10.1002/2013JE004579, 2014.

Britt, D. T., C. Agee, C. Allen, J. L. Bada, J. F. Bell, D. Blaney, J. Bradley, B. Clark, D. Durda, K. Housen, D. Kring, H. McSween, M. Robinson, P. Thomas and E. Young (2002). "The Gulliver mission: A short-cut to martian sample return." *Meteoritics & Planetary Science* 37(7): A25-A25.

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Christensen, P. R., S. W. Ruff, R. L. Fergason, A. T. Knudson, S. Anwar, R. E. Arvidson, J. L. Bandfield, D. L. Blaney, C. Budney, W. M. Calvin, T. D. Glotch, M. P. Golombek, N. Gorelick, T. G. Graff, V. E. Hamilton, A. Hayes, J. R. Johnson, H. Y. McSween, G. L. Mehall, L. K. Mehall, J. E. Moersch, R. V. Morris, A. D. Rogers, M. D. Smith, S. W. Squyres, M. J. Wolff and M. B. Wyatt (2004). "Initial results from the Mini- TES experiment in Gusev crater from the Spirit rover." *Science* 305(5685): 837-842.

Christensen, P. R., M. B. Wyatt, T. D. Glotch, A. D. Rogers, S. Anwar, R. E. Arvidson, J. L. Bandfield, D. L. Blaney, C. Budney, W. M. Calvin, A. Faracaro, R. L. Fergason, N. Gorelick, T. G. Graff, V. E. Hamilton, A. G. Hayes, J. R. Johnson, A. T. Knudson, H. Y. McSween, G. L. Mehall, L. K. Mehall, J. E. Moersch, R. V. Morris, M. D. Smith, S. W. Squyres, S. W. Ruff and M. J. Wolff (2004). "Mineralogy at Meridiani Planum from the Mini-TES experiment on the Opportunity Rover." *Science* 306(5702): 1733-1739.

Cloutis, E. A., F. C. Hawthorne, S. A. Mertzman, K. Krenn, M. A. Craig, D. Marcino, M. Methot, J. Strong, J. F. Mustard, D. L. Blaney, J. F. Bell and F. Vilas (2006). "Detection and discrimination of sulfate minerals using reflectance spectroscopy." *Icarus* 184(1): 121-157.

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Crumpler, L. S., R. E. Arvidson, S. W. Squyres, T. McCoy, A. Yingst, S. Ruff, W. Farrand, Y. McSween, M. Powell, D. W. Ming, R. V. Morris, J. F. Bell, J. Grant, R. Greeley, D. DesMarais, M. Schmidt, N. A. Cabrol, A. Haldemann, K. W. Lewis, A. E. Wang, C. Schroder, D. Blaney, B. Cohen, A. Yen, J. Farmer, R. Gellert, E. A. Guinness, K. E. Herkenhoff, J. R. Johnson, G. Klingelhofer, A. McEwen, J. W. Rice, M. Rice, P.

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Drube, L., K. Leer, W. Goetz, H. P. Gunnlaugsson, M. P. Haspang, N. Lauritsen, M. B. Madsen, L. K. D. Sorensen, M. D. Ellehoj, M. T. Lemmon, R. V. Morris, D. Blaney, R. O. Reynolds and P. H. Smith (2010). "Magnetic and optical properties of airborne dust and settling rates of dust at the Phoenix landing site." *Journal of Geophysical Research-Planets* 115.

Glenar, D. A., D. L. Blaney and J. J. Hillman (2003). "AIMS: Acousto-optic imaging spectrometer for spectral mapping of solid surfaces." *Acta Astronautica* 52(2-6): 389-396.

Edwards, P.H., J.C. Bridges, R. Wiens, R. Anderson, D. Dyar, M. Fisk, L. Thompson, P. Gasda, J. Filiberto, S.P. Schwenzer, D. Blaney, and I. Hutchinson, Basalt-trachybasalt samples in Gale Crater, Mars, *Meteoritics & Planetary Science*, 52(11):2931-2410, doi:10.1111/maps.12953, 2017.

Francis, R., T. Estlin, G. Doran, S. Johnstone, D. Gaines, V. Verma, M. Burl, J. Frydenvang, S. Montaño, R.C. Wiens, S. Schaffer, O. Gasnault, L. DeFlores, D. Blaney, and B. Bornstein, AEGIS autonomous targeting for ChemCam on Mars Science Laboratory: Deployment and results of initial science team use, *Science Robotics*, 2(7):eaan4582, doi:10.1126/scirobotics.aan4582, 2017.

Glenar, D. A., G. Hansen, G. Bjoraker, M. Smith, J. Pearl and D. Blaney (2005). "Bright-region radiative properties within the Mars south polar cap (L-s=231) from near-infrared spectroscopic imaging." *Icarus* 174(2): 600-603.

Glenar, D. A., R. E. Samuelson, J. C. Pearl, G. L. Bjoraker and D. Blaney (2003). "Spectral imaging of martian water ice clouds and their diurnal behavior during the 1999 aphelion season (L-s=130 degrees)." *Icarus* 161(2): 297-318.

Goetz, W., W. T. Pike, S. F. Hviid, M. B. Madsen, R. V. Morris, M. H. Hecht, U. Staufer, K. Leer, H. Sykulska, E. Hemmig, J. Marshall, J. M. Morookian, D. Parrat, S. Vijendran, B. J. Bos, M. R. El Maarry, H. U. Keller, R. Kramm, W. J. Markiewicz, L. Drube, D. Blaney, R. E. Arvidson, J. F. Bell, R. Reynolds, P. H. Smith, P. Woida, R. Woida and R. Tanner (2010). "Microscopy analysis of soils at the Phoenix landing site, Mars: Classification of soil particles and description of their optical and magnetic properties." *Journal of Geophysical Research-Planets* 115.

Goetz, W., W. T. Pike, S. F. Hviid, M. B. Madsen, R. V. Morris, M. H. Hecht, U. Staufer, K. Leer, H. Sykulska, E. Hemmig, J. Marshall, J. M. Morookian, D. Parrat, S. Vijendran, B. J. Bos, M. R. El Maarry, H. U. Keller, R. Kramm, W. J. Markiewicz, L. Drube, D. Blaney, R. E. Arvidson, J. F. Bell, R. Reynolds, P. H. Smith, P. Woida, R. Woida and R. Tanner (2010). "Microscopy analysis of soils at the Phoenix landing site,

Mars: Classification of soil particles and description of their optical and magnetic properties (vol 115, E00E99, 2010)." *Journal of Geophysical Research-Planets* 115.

Greeley, R., R. E. Arvidson, P. W. Barlett, D. Blaney, N. A. Cabrol, P. R. Christensen, R. L. Fergason, M. P. Golombek, G. A. Landis, M. T. Lemmon, S. M. McLennan, J. N. Maki, T. Michaels, J. E. Moersch, L. D. V. Neakrase, S. C. R. Rafkin, L. Richter, S. W. Squyres, P. A. de Souza, R. J. Sullivan, S. D. Thompson and P. L. Whelley (2006). "Gusev crater: Wind-related features and processes observed by the Mars Exploration Rover Spirit." *Journal of Geophysical Research-Planets* 111(E2).

Greeley, R., S. W. Squyres, R. E. Arvidson, P. Bartlett, J. F. Bell, D. Blaney, N. A. Cabrol, J. Farmer, B. Farrand, M. P. Golombek, S. P. Gorevan, J. A. Grant, A. F. C. Haldemann, K. E. Herkenhoff, J. Johnson, G. Landis, M. B. Madsen, S. M. McLennan, J. Moersch, J. W. Rice, L. Richter, S. Ruff, R. J. Sullivan, S. D. Thompson, A. Wang, C. M. Weitz, P. Whelley and T. Athena Sci (2004). "Wind-related processes detected by the Spirit rover at Gusev Crater, Mars." *Science* 305(5685): 810-+.

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